

CCB 4-DE

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DIAGNOSTIC EXAM

ENGINEER
ANCOC CMF 12
SKILL LEVEL 4

PREPARED BY
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FOR
U.S. ARMY RESERVE SCHOOLS



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Advanced Noncommissioned Officer Course**Diagnostic Examination**

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COURSE: Combat Engineering (CMF 12) ANCOG (RC)

LESSON: Diagnostic Test

INSTRUCTIONS

1. Do not turn this page until told to do so.
2. Make no marks in this book. Use the answer sheet provided. Print your name and rank at the top of the answer sheet.
3. Read instructions, directions, and questions carefully. Answer all questions. There is one correct answer for each question.
4. Record your answer by writing the appropriate letter on your answer sheet.
5. You will have 2 hours to complete the test.
6. You will turn in all work for calculation questions.
7. After the test begins, the instructor will not answer any questions pertaining to the test unless they refer to errors in the test or faulty reproduction.
8. Upon completion of the test, turn in your test booklet and answer sheet to the instructor, and go outside.

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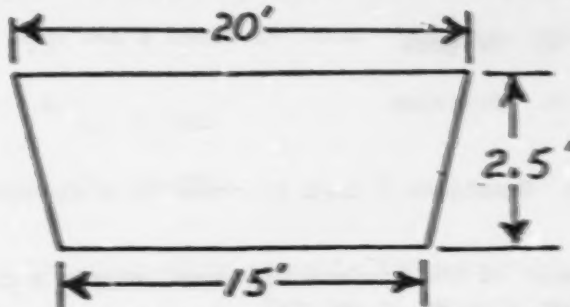
Section I - Reconnaissance

1. You have just completed a hasty route reconnaissance. The following information was recorded: Traveled way width 7m; overhead clearance is limited to 4.2m; Military Load Class is 55; there is regular and recurrent flooding. What is the route classification formula?

- a. 7/A/65/00/ (OB)
- b. 7/L/55/4.2 (OB) (W)
- c. 6/X/55/1.5 (OB)
- d. 6/Y/65/4.2 (OB)

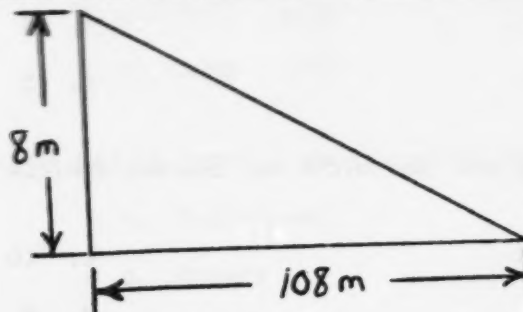
2. You are looking for a possible water point. A cross section of the stream is shown below. The stream velocity is 5 feet per second. What is the quantity of water in gallons per minute?

- a. 1,680
- b. 9,400
- c. 16,840
- d. 84,000



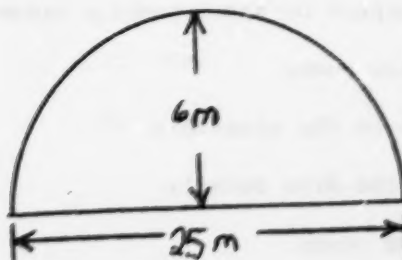
3. Your vehicles must ascend a hill with the dimensions shown below. What is the percentage of slope?

- a. 7
- b. 8
- c. 9
- d. 10



4. What is the radius of the curve shown below?

- a. 14
- b. 15
- c. 16
- d. 17



5. In the absence of instructions, routes are reconnoitered based on the minimum traveled way width for what type of traffic?

- a. Single flow wheel
- b. Single flow track
- c. Double flow wheel
- d. Double flow track

Section II - Mine Warfare

6. Which commander is the required authority for deliberate protective minefields?

- a. Brigade
- b. Division
- c. Battalion
- d. Company

NOTE: Questions 7 thru 12 refer to a standard pattern minefield.

7. What is the minimum distance between a cluster and a lane, gap, boundary, or another cluster in meters?

- a. 2
- b. 3
- c. 4
- d. 5

8. What is the lane width for one-way vehicle traffic through a minefield in meters?

- a. 14
- b. 12
- c. 10
- d. 8

9. What is the purpose of the irregular outer edge (IOE) short strips?

- a. Confuse the enemy
- b. Add depth to the minefield
- c. Increase the mine density
- d. Impede the enemy

10. You are laying a minefield with a front of 250m. How many IOE live clusters are required?

- a. 26
- b. 27
- c. 28
- d. 29

11. The desired density for your minefields AT 1 APF 2 APB 2. How many regular lettered strips are required?

- a. 3
- b. 6
- c. 9
- d. 12

12. Your minefield has a front of 300m and a depth of 150m. How many meters of concertina are required?

- a. 450
- b. 900
- c. 1,000
- d. 1,484

13. How many personnel hours would be required to assemble 150 meters of bangalore torpedo?

- a. 3.25 - 4.75
- b. 3.50 - 4.50
- c. 5.25 - 6.75
- d. 5.50 - 7.50

14. What is the safest and quickest way to proof a vehicle-width lane?

- a. ACE
- b. Mechanical
- c. Explosives
- d. Dozers

15. The standard minefield marking set #2 will mark a safe lane up to how many meters through a minefield?

- a. 400
- b. 500
- c. 600
- d. 700

SECTION III - Demolition

16. How many pounds of TNT are required to cut one 19 inch diameter tree, using tamped internal charges?

- a. 1.0
- b. 1.4
- c. 2.0
- d. 3.2

17. How many packages of C4 (M112) are required to cut "Four" steel I-Beams. Each beam's flanges measurements of 6 inches x 3/4 inches and a web of 12 inches x 1 inch.

- a. 16
- b. 20
- c. 24
- d. 28

18. How many pounds of TNT are required to breach a reinforced concrete wall 5 feet thick, 8 feet high and 5 feet wide, using elevated untamped charges and the formula method?

- a. 139
- b. 140
- c. 141
- d. 142

19. How many packages of M112 should you use to breach a concrete column 4 feet thick using a counterforce charge?

- a. 4
- b. 5
- c. 6
- d. 7

20. Using the table method, how many pounds of TNT should you use to breach a reinforced concrete wall 8 feet thick, 12 feet high, and 22 feet wide, using an internal charge?

- a. 52
- b. 72
- c. 104
- d. 156

SECTION IV - Field Fortifications

21. You must construct 175 meters of protective wire around the tactical operations center. The perimeter must be covered with one belt of triple standard concertina. How many long pickets are required?

- a. 96
- b. 103
- c. 110
- d. 112

22. You must construct 5.8, 300 meter sections of double apron, 4- and 2-pace wire entanglement. The construction will be done at night, using U-shaped pickets by experienced troops. How many man hours are required to construct the obstacle?

- a. 230
- b. 343
- c. 344
- d. 413

23. You must construct a rectangular log crib using the offset design. The roadway width is 24 feet. How many 7 foot posts are required?

- a. 4
- b. 5
- c. 9
- d. 18

24. Your heavy equipment section must install an 800 meter long rectangular antitank ditch during daylight hours. The soil is rocky and you want the preferred depth. You have 2 ACE (M9) and the operators are excellent. What is the construction time for the ditch in blade hours?

- a. 17
- b. 36
- c. 49
- d. 54

25. You must construct a log post obstacle 12 meters wide and four rows in depth, using platoon hand tools. How many hours are required to complete the job?

- a. 3 - 5
- b. 6 - 10
- c. 12 - 20
- d. 24 - 30

SECTION V - Fixed Bridging

26. You must construct a DS Bailey Bridge. How many enlisted men are required to construct the bridge?

- a. 39
- b. 42
- c. 58
- d. 66

27. What is the estimated assembly time for a 120 foot TS Bailey Bridge in hours?

- a. 4
- b. 4.5
- c. 5
- d. 5.5

28. What type grillage is required for a 60 foot DS Bailey Bridge. The safe soil pressure is 2.2 (tons per sq ft).

- a. 3
- b. 5
- c. 6
- d. 7

29. How many rocking rollers are required on the near bank for a 120 foot DS Bailey Bridge?

- a. 1
- b. 2
- c. 3
- d. 4

30. You are constructing the site layout for a Bailey Bridge. How far are the control lines placed apart?

- a. 7', 5"
- b. 12', 6"
- c. 14', 10"
- d. 25', 8"

31. You are constructing an H&H Fixed Span Bridge. Your initial bridge length is 24'. What is the correct "W-Frame" configuration?

- a. 23', 4"
- b. 30'
- c. 38', 4"
- d. 45'

32. You must construct an M4T6 Fixed Span Bridge. The required Military Load Classification is 70 and the initial bridge length is 57'. How many trestle assemblies are required?

- a. 4
- b. 3
- c. 2
- d. 1

33. When constructing the M4T6 Fixed Span Bridge, how many curb adapters are required per stiffener?

- a. 4
- b. 3
- c. 2
- d. 1

SECTION 42 - River Crossing Operations

34. What is the Military Load Classification for a 5-bay M4T6 Raft under reinforced construction, with a current velocity of 8 fps?

- a. 45/50
- b. 55/60
- c. 60/70
- d. 65/70

35. How much time, in hours, is required to construct a 300 feet M4T6 Float Bridge? The bridge will be reinforced and will be constructed at night.

- a. 2
- b. 4
- c. 6
- d. 9

36. You must complete a rafting mission with the Ribbon Bridge. The current velocity is 7 fps. What type of rafting would you conduct?

- a. Vertical
- b. Conventional
- c. Horizontal
- d. Longitudinal

37. You are constructing a Ribbon Bridge. The gap is 100 meters. How many interior bays are required?

- a. 10
- b. 11
- c. 12
- d. 13

38. What is the primary anchorage when the maximum anticipated current does not exceed 3 feet per second and the stream bed has a hard bottom?

- a. Combination anchors
- b. Kedge anchors
- c. Shore guys
- d. Expedient anchors

39. You are constructing an overhead anchorage system. The wet gap is 200 feet. How far apart will you place the towers in feet?

- a. 320
- b. 220
- c. 120
- d. 100

40. You are constructing an overhead anchorage system. The distance between towers is 196 feet. What is the initial sag for the cable in feet?

- a. 3.92'
- b. 3.50'
- c. 2.63'
- d. 1.58'

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CMF 12 Diagnostic Test

Answer Sheet

DATE: _____

NAME: _____ SSN: _____

MOS: _____ GRADE: _____ UNIT: _____

INSTALLATION: _____

- | | | |
|-----------|-----------|-----------|
| 1. _____ | 14. _____ | 27. _____ |
| 2. _____ | 15. _____ | 28. _____ |
| 3. _____ | 16. _____ | 29. _____ |
| 4. _____ | 17. _____ | 30. _____ |
| 5. _____ | 18. _____ | 31. _____ |
| 6. _____ | 19. _____ | 32. _____ |
| 7. _____ | 20. _____ | 33. _____ |
| 8. _____ | 21. _____ | 34. _____ |
| 9. _____ | 22. _____ | 35. _____ |
| 10. _____ | 23. _____ | 36. _____ |
| 11. _____ | 24. _____ | 37. _____ |
| 12. _____ | 25. _____ | 38. _____ |
| 13. _____ | 26. _____ | 39. _____ |
| | | 40. _____ |